ſieurs *Daubenton* and *Adanſon*, a great number of experiments, of which the duke has favoured the public with a particular account.

In the year 1757, there were two accounts publiſhed upon this ſubject: the one is a memoir of M. Æpinus, read to the Royal Academy at Berlin, intituled, *De quibuſdam experimentis electricis notabilioribus.* The other is a treatiſe in quarto, printed at Roſtock, intituled, *Diſputatio de electricitatibus contrariis. Auctore Joanne Carolo Wilke.* Since which time, Dr. Heberden, who is ever deſirous of extending the bounds of ſcience, having procured ſome of theſe ſtones from Holland, a great number and variety of experiments with them have been made here, particularly by the ingenious Mr. Wilſon; an account of which he has very lately communicated to the Royal Society.

XXXVIII. *An Attempt to account for the regular diurnal Variation of the horizontal magnetic Needle; and alſo for its irregular Variation at the Time of an Aurora Borealis:* By John Canton, *M. A. and F. R. S.*

Read Dec. 13, 1759. THE late celebrated Mr. George Graham made a great number of obſervations on the diurnal variation of the magnetic needle, in the years 1722 and 1723; but declared himſelf ignorant of the cauſe of that variation, in N° 383 of the Philoſophical Tranſactions, where many of thoſe obſervations are to be found. About

the year 1750, Mr. Wargentin, ſecretary of the Royal Academy of Sciences in Sweden, took notice, both of the regular diurnal variation of the needle, and alſo of its being diſturbed at the time of an aurora borealis, as recorded in the 47th volume of the Philoſophical Tranſactions; but is ſilent as to the cauſe. I had no opportunity of making obſervations of this ſort myſelf, till the latter end of the year 1756; but, ſince that time, I have made near four thouſand, with an excellent variation-compaſs, of about nine inches in diameter. The number of days, on which theſe obſervations were taken, is 603; and the diurnal variation on 574 of them was *regular*; that is, the abſolute variation of the needle weſtward, was *increaſing* from about eight or nine o'clock in the morning, till about one or two in the afternoon, when the needle became ſtationary for ſome time; after that, the abſolute variation weſtward was *decreaſing*, and the needle came back again to its former ſituation, or near it, in the night, or by the next morning. The diurnal variation is *irregular*, when the needle moves ſlowly eaſtward in the latter part of the morning, or weſtward in the latter part of the afternoon; alſo when it moves much either way after night, or ſuddenly both ways within a ſhort time. Theſe irregularities ſeldom happen more than once or twice in a month, and are always accompanied (ſo far as I have been able to obſerve) with an aurora borealis. Thus having explained what I mean by the regular and irregular diurnal variation, and ſhewn, that this variation is generally regular; I ſhall now, in the firſt place, endeavour to account experimentally for the regular variation; then offer a conjecture concerning the

the cauſe of the irregular variation; and, laſtly, attempt to make it appear probable, that the aurora borealis ariſes from the ſame cauſe.

The attractive power of the magnet, (whether natural, or artificial) will *decreaſe* while the magnet is *heating*, and *increaſe* while it is *cooling*; as will appear by the following experiments.

Experiment 1. About E. N. E. from a compaſs, a little more than three inches in diameter, I placed a ſmall magnet two inches long, half an inch broad, and three-twentieths of an inch thick, parallel to the magnetic meridian; and at ſuch a diſtance, that the power of the ſouth end of the magnet was but juſt ſufficient to keep the north end of the needle to the N. E. point, or to 45 degrees. The magnet being covered by a braſs weight of ſixteen ounces, about two ounces of boiling water was poured into it, by which means the magnet was gradually heating for ſeven or eight minutes; and during that time, the needle moved about three quarters of a degree weſtward, and became ſtationary at 44° ¼; in nine minutes more, it came back a quarter of a degree, or to 44° ½; but was ſome hours before it gained its former ſituation, and ſtood at 45°. *N. B.* The greater the power of the ſame magnet, the more it will loſe in a given degree of heat.

Exp. 2. On each ſide of the compaſs, and parallel to the magnetic meridian, I placed a ſtrong magnet of the ſize above-mentioned; ſo that the ſouth ends of both the magnets acted equally on the north end of the needle, and kept it in the magnetic meridian; but if either of the magnets was removed, the needle was attracted by the other, ſo as to ſtand at 45 degrees.

grees. The magnets were both covered with braſs weights of ſixteen ounces each. Into the eaſtern weight I poured about two ounces of boiling water; and the needle in one minute moved half a degree, and continued moving weſtward for about ſeven minutes, when it arrived at 2° ¾. It was then ſtationary for ſome time; but, in twenty-four minutes from the beginning, it came back to 2° ½, and in fifty minutes to 2° ¼. I then filled the weſtern weight with boiling water, and in one minute, the needle came back to 1° ¼; in ſix minutes more, it ſtood half a degree eaſtward; and after that, in about forty minutes, it returned to the magnetic north, or its firſt ſituation.

It is evident, that the magnetic parts of the earth in the north on the eaſt ſide, and the magnetic parts of the earth in the north on the weſt ſide of themagnetic meridian, equally attract the north end of the needle. If then the eaſtern magnetic parts are heated faſter by the ſun in the morning, than the weſtern, the needle will move weſtward, and the abſolute variation will increaſe; when the attracting parts of the earth on each ſide the magnetic meridian have their heat increaſing equally, the needle will be ſtationary, and the abſolute variation will then be greateſt; but, when the weſtern magnetic parts are either heating faſter, or cooling ſlower than the eaſtern, the needle will move eaſtward, or the abſolute variation will decreaſe; and when the eaſtern and weſtern magnetic parts are cooling equally faſt, the needle will again be ſtationary, and the abſolute variation will then be leaſt. This may be ſtill further illuſtrated, by placing the compaſs and two magnets, as in the laſt experi-

ment, behind a ſcreen near the middle of the day in ſummer; then, if the ſcreen be ſo moved, that the ſun may ſhine only on the eaſtern magnet, the needle will ſenſibly vary in its direction, and move towards the weſt; and if the eaſtern magnet be ſhaded, while the ſun ſhines on the weſtern, the needle will move the contrary way. By this theory, the diurnal variation in the ſummer ought to exceed that in the winter; and I accordingly find by obſervation, that the diurnal variation in the months of June and July, is almoſt double that of December and January.

The irregular diurnal variation muſt ariſe from ſome other cauſe than that of heat communicated by the ſun; and here I muſt have recourſe to ſubterranean heat, which is generated without any regularity as to time, and which will, when it happens in the north, affect the attractive power of the magnetic parts of the earth on the north end of the needle. The reverend Dr. Hales has a good obſervation on this heat, in the Appendix to the ſecond volume of his Statical Eſſays, which I ſhall here tranſcribe. "That the warmth of "the earth, at ſome depth under-ground, has an "influence in promoting a thaw, as well as the "change of the weather from a freezing to a thaw-"ing ſtate, is manifeſt from this obſervation; viz. "Nov. 29, 1731, a little ſnow having fallen in the "night, it was, by eleven the next morning, moſtly "melted away on the ſurface of the earth, except in "ſeveral places in *Buſhy-Park*, where there were "drains dug, and covered with earth, where the "ſnow continued to lie, whether thoſe drains were "full of water, or dry; as alſo where elm-pipes lay "under-ground; a plain proof that theſe drains inter-

"cepted the warmth of the earth from aſcending "from greater depths below them; for the ſnow lay "where the drain had more than four feet depth of "earth over it. It continued alſo to lie on thatch, "tiles, and the tops of walls."

That the air neareſt the earth will be moſt warmed by the heat of it, is obvious; and this has frequently been taken notice of in the morning, before day, by means of thermometers at different diſtances from the ground, by the reverend Dr. Miles, at Tooting in Surrey; and is mentioned in p. 526, of the 48th volume of the Philoſophical Tranſactions.

The aurora borealis, which happens at the time the needle is diſturbed by the heat of the earth, is ſuppoſed to be the electricity of the heated air above it; and this will appear chiefly in the northern regions, as the alteration in the heat of the air in thoſe parts will be greateſt. This hypotheſis will not ſeem improbable, if it be conſidered, that electricity is now known to be the cauſe of thunder and lightning; that it has been extracted from the air at the time of an aurora borealis; that the inhabitants of the northern countries obſerve the aurora to be remarkably ſtrong, when a ſudden thaw happens after ſevere cold weather; and that the curious in theſe matters, are now acquainted with a ſubſtance, that will, without friction, both emit and abſorb the electrical fluid, only by the increaſe, or diminution of its heat: for if the *Tourmalin* be placed on a plane piece of heated glaſs, or metal, ſo that each ſide of it, by being perpendicular to the ſurface of the heating body, may be equally heated; it will, while heating, have the electricity of one of its ſides poſitive, and that of the other

negative; this will likewiſe be the caſe when it is taken out of boiling water, and ſuffered to cool; but the ſide that was poſitive while it was heating, will be negative while it is cooling, and the ſide that was negative, will be poſitive *.

For the ſake of thoſe who may be deſirous of examining the diurnal variations of the needle very minutely, I ſhall annex a complete year's obſervations; and ſhall deduce, from the regular variations during that time, the mean diurnal variation belonging to each month: whence it will appear, that the diurnal variation increaſes from January to June, and decreaſes from June to December.

In the following table, the firſt column contains the day of the month; and the ſecond, the hour and minute of the day (according to equal time), when each obſervation was made. The third column contains the abſolute variation of the needle weſtward, or the angle it made with a true meridian line at the reſpective times; which differs leſs than two minutes of a degree from that at Greenwich, where the reverend Dr. Bradley was ſo kind as to give me ſeveral opportunities of taking it, in his preſence, by the curious apparatus for that purpoſe, belonging to the royal obſervatory. And in the fourth column are ſet down the degrees of heat, by a Fahrenheit's thermometer, hung without, in the ſhaded air, on the north ſide of the houſe.

* See the Gentleman's Magazine for laſt September.

Spital Square, London, 1759.

January.						January.					
D.	H.	M.	°	′	Th.	D.	H.	M.	°	′	Th.
1	1	M 0	18	54	34	6	0	A 5	19	6	39
	10	15	18	56	37		1	10	19	6	40
	11	0	18	57	38		1	30	19	5	40
	0	A 15	18	59	40		2	30	19	4	39
	1	0	19	0	42		9	10	18	54	33⅓
	1	45	18	59	42	7	11	M 0	18	59	42
	8	0	18	54	40		0	A 30	19	0	44
2	10	M 30	18	56	45		1	0	19	1	45
	1	A 12	18	59	46		1	30	19	0	47
3	0	M 10	18	54	45		2	30	18	59	46
	10	0	18	57	45		8	50	18	55	44
	0	A 20	19	2	44½	8	0	M 40	18	53	45
	1	0	19	3	44		8	45	18	53	47
	1	30	19	4	44		9	45	18	55	47½
	2	0	19	3	44		1	A 25	19	1	50
	4	0	18	59	45		4	50	18	56	48
	9	0	18	54	46		9	10	18	52	47
4	0	M 18	18	54	47	9	0	M 25	18	54	46
	9	30	18	56	49		8	53	18	57	44
	11	58	18	58	52		0	A 30	19	0	46
	1	A 55	18	58	53		1	15	19	0	47
	3	12	18	58	52½		9	0	18	57	49
5	0	M 30	18	54	51		11	30	19	0	52
	10	0	18	57	47		11	40	19	2	52
	0	A 30	19	0	46	10	9	M 0	18	55	52
	1	15	19	1	45½		10	10	18	56	52½
	2	20	19	0	45		1	A 0	18	59	54
	4	0	18	57	44		1	30	18	59	54½
	9	30	18	54	42		2	20	18	59	54
6	0	M 20	18	54	40		3	0	18	58	54
	10	15	19	2	37		9	10	18	55	53⅓
	10	45	19	4	38		11	45	18	55	52

January.						January.					
D.	H.	M.	°	′	Th.	D.	H.	M.	°	′	Th.
11	8 M	40	18	54	48	15	3 A	50	18	58	51
	9	40	18	55	49		9	10	18	55	50
	10	40	18	58	49	16	0 M	25	18	55	50
	11	50	19	0	49½		8	20	18	55	48
	0 A	40	19	2	51		9	20	18	55	49
	1	20	19	2	51		10	30	18	57	49½
	2	10	19	1	51		11	30	18	59	50
	2	45	19	0	51		1 A	0	19	2	50
12	0 M	15	18	57	47		2	55	19	0	49
	9	0	18	54	48		5	50	18	59	48½
	10	10	18	56	48		9	0	18	58	48
	11	5	18	58	48½	17	0 M	10	18	54	47
	0 A	5	19	0	49½		9	0	18	55	44
	1	20	19	1	50		10	15	18	56	45
	2	30	19	0	50		0 A	20	18	59	46
	5	15	18	57	49½		1	10	19	0	46½
	8	30	18	56	48		2	45	18	59	46½
13	0 M	30	18	56	46		6	0	19	1	46½
	9	20	18	55	47		9	0	18	48	46½
	10	20	18	56	47		9	5	18	45	46½
	11	50	18	58	48		9	20	18	46	46½
	1 A	15	19	0	45		9	30	18	47	46½
	2	30	18	59	44	18	0 M	20	18	50	46
	7	0	18	57	42		8	30	18	54	48½
14	0 M	10	18	58	43		10	0	18	55	48½
	9	45	18	56	46		11	30	18	58	49
	10	45	18	57	50		0 A	10	19	0	49½
	9 A	10	18	55	48		1	55	19	1	50
15	0 M	10	18	55	47		5	20	18	59	47
	8	30	18	55	48	19	0 M	5	18	55	43
	10	20	18	56	51		8	45	18	56	37
	11	35	18	58	52		11	0	18	59	39
	0 A	45	19	0	52½		0 A	20	19	1	39
	1	35	19	0	52		0	45	19	3	39½

January.						January.					
D.	H.	M.	°	′	Th.	D.	H.	M.	°	′	Th.
19	1 A	20	19	4	39	22	2 A	45	19	2	36½
	2	15	19	3	39		3	45	19	0	35
	3	35	19	1	38		8	0	18	58	32
	6	15	19	4	37		9	10	18	57	34
	6	32	19	0	37	23	0 M	10	18	59	31
	6	53	19	0	36		8	50	18	55	28
	9	0	18	59	34		9	50	18	56	29
20	0 M	5	18	57	32½		11	25	18	59	33
	8	35	18	56	32½		1 A	10	19	2	37
	9	45	18	58	34		3	45	19	3	36½
	0 A	45	19	3	38		5	10	19	0	35
	1	25	19	4	40		7	0	18	59	34
	2	10	19	2	39½		9	0	18	56	33
	7	15	18	58	37	24	0 M	25	18	56	32
	8	45	18	54	36		9	0	18	57	35
	9	20	18	54	35		10	0	18	59	38
21	0 M	10	18	58	33		11	45	19	1	41
	10	0	18	57	32		0 A	15	19	2	42
	11	0	18	59	33		0	40	19	3	42
	12	0	19	1	35		1	15	19	4	42
	1 A	0	19	2	37		2	0	19	4	42½
	1	35	19	2	37½		3	0	19	4	43
	2	45	19	1	36½		3	55	19	2	41
	5	5	19	0	34		6	25	18	59	38
	9	55	18	57	31	25	0 M	25	18	50	38
22	0 M	30	18	55	28½		9	0	18	54	38
	8	30	18	54	28		11	0	18	58	43
	9	30	18	55	29		0 A	20	19	0	44
	10	40	18	58	32		1	20	19	1	45
	11	40	19	0	35		1	45	19	1	45
	0 A	30	19	2	36½		2	20	19	1	45
	1	10	19	4	37		4	0	18	59	44½
	1	35	19	4	37		7	45	18	57	44
	2	10	19	3	37	26	0 M	20	18	56	42

January.

D.	H.	M.	☉	′	Th.
26	8 M	35	18	55	44
	10	40	18	56	46
	0 A	30	19	1	47
	1	25	19	4	47½
	2	20	19	3	47
	4	30	19	0	46
	9	0	18	57	45
	11	45	18	56	44
27	8 M	40	18	53	43
	10	0	18	54	44
	11	30	18	58	46
	1 A	7	19	0	48
	1	30	19	0	49
	2	10	19	1	49
	3	35	18	59	48
	8	20	18	57	47
	11	55	18	56	47
28	10 M	0	18	55	49
	11	0	18	56	49
	1 A	0	19	1	49
	1	30	19	2	49½
	2	40	19	1	47
	6	45	18	59	43
	8	50	18	56	42
29	0 M	25	18	56	39
	8	40	18	54	35
	10	15	18	55	38
	11	40	18	58	42
	1 A	0	19	2	45
	1	25	19	2	45
	2	0	19	3	45
	2	45	19	2	44
	3	35	19	0	43½
	9	0	18	58	42

January.

D.	H.	M.	☉	′	Th.
30	0 M	25	18	57	41
	9	0	18	56	44
	10	0	18	54	46
	11	10	18	57	47
	1 A	0	19	3	48½
	6	30	18	58	47½
	11	55	18	54	47
31	8 M	30	19	0	45
	10	0	18	57	46
	11	0	18	58	47
	12	0	18	59	48
	0 A	58	19	1	49
	1	50	19	3	49
	2	15	19	2	49
	4	0	18	59	48½
	7	10	18	58	47
	11	55	18	57	46

February.

D.	H.	M.	☉	′	Th.
1	8 M	40	18	54	39
	9	20	18	54	40
	10	0	18	55	41
	11	45	18	58	43
	0 A	50	19	0	45
	1	30	19	0	46
	2	12	18	59	46
	4	40	18	57	44
	11	40	18	56	40
2	9 M	15	18	55	46
	0 A	10	19	0	49
	1	15	19	1	50
	2	10	19	3	49½

February.						February.					
D.	H.	M.	☉	′	Th.	D.	H.	M.	☉	′	Th.
2	2A	40	19	2	49		0A	9	18	57	46
	4	30	18	59	48½		0	18	19	1	46½
	9	20	18	57	48		0	25	19	6	46½
3	0M	23	18	56	48		0	31	19	8	47
	8	30	18	57	49		2	0	19	1	48
	9	30	18	57	49		3	0	18	36	47½
	10	15	18	58	49½		4	25	18	39	46½
	0A	30	19	6	50		4	26½	18	54	46½
	1	5	19	7	50		4	28	19	4	46½
	1	40	19	8	49		4	29½	19	44	46½
	9	0	18	51	43		4	30½	19	46	46½
4	0M	10	18	58	40		4	32½	19	49	46½
	9	30	18	54	42		4	34	19	4	46½
	11	0	18	58	45		4	35½	19	19	46½
	11	20	18	24	45½		4	36½	19	24	46½
	11	22	18	16	45½		4	38	19	34	46½
	11	22½	18	12	45½		4	38½	20	4	46½
	11	24	18	19	45½		4	39⅔	20	54	46½
	11	25½	18	14	45½		4	41	21	24	46½
	11	27	18	21	45½		4	42¾	20	44	46½
	11	29	18	34	45½		4	44⅓	19	24	46½
	11	30	18	29	45½		4	45⅓	17	54	46½
	11	31½	18	29	45½		4	47	18	14	46½
	11	32½	18	24	45½		4	48½	18	32	46½
	11	33	18	19	45½		4	51¾	17	29	46½
	11	35	18	24	45½		4	52¾	17	54	46½
	11	36	18	24	45½		4	54	18	24	46½
	11	38½	18	21	45½		5	7½	17	54	46
	11	42	18	16	45½		5	9½	17	50	46
	11	46	18	34	46		5	39½	18	37	46
	11	48½	18	36	46		5	51	19	9	45½
	11	53	18	45	46		6	44	19	2	44
	12	0	18	51	46		6	53	18	57	43½
	0A	6	18	54	46		8	40	19	2	42

A strong Aurora Borealis.

February.						February.					
D.	H.	M.	°	′	Th.	D.	H.	M.	°	′	Th.
4	10 A	10	18	59	41	8	9 A	25	19	1	46
5	8 M	32	19	11	43	9	0 M	10	18	59	46
	11	8	18	59	45		8	55	18	58	45
	11	58	19	2	47		10	0	18	58	45½
	0 A	30	18	58	49		11	40	19	0	46
	1	40	19	4	50		0 A	55	19	4	46½
	6	0	18	55	48		1	50	19	5	47
	6	42	18	49	48		2	15	19	4	47
	7	24	18	44	48		5	35	19	0	45
	7	28	18	46	48		9	15	18	58	43
	8	50	18	54	48	10	0 M	50	18	57	42
6	0 M	14	18	55	48½		8	35	18	56	41
	8	30	18	55	48		10	0	18	56	43
	10	0	18	55	48½		11	30	18	59	44
	11	55	19	1	49		1 A	15	19	4	45
	1 A	5	19	5	50		2	10	19	6	44
	2	45	19	4	49		8	30	19	2	41
	5	20	18	57	47	11	1 M	10	18	58	42
	8	0	18	56	44		10	0	18	58	47
	11	50	18	50	42		11	0	18	59	49
7	8 M	40	18	55	41		0 A	5	19	1	51
	9	50	18	56	43		1	30	19	3	51½
	11	20	19	0	45		2	30	19	4	51
	1 A	17	19	4	49		4	20	19	0	47
	2	15	19	6	49		7	30	18	59	44
	6	30	19	1	48		10	5	18	58	43
	11	55	18	57	47	12	0 M	45	18	59	42
8	8 M	40	18	56	46		8	40	18	55	41
	10	10	18	56	48		10	0	18	55	43
	11	10	18	57	48½		11	0	18	56	45
	0 A	30	19	2	49		12	0	18	59	48
	1	40	19	3	49		1 A	0	19	2	49
	2	20	19	3	48½		2	0	19	4	49
	3	55	19	2	48		2	45	19	3	48

An Aurora Bor.

February.						February.					
D.	H.	M.	°	′	Th.	D.	H.	M.	°	′	Th.
12	3 A	45	19	3	47	17	0 M	5	18	56	40
	6	20	18	58	43		8	45	18	54	37
	9	0	18	57	42		9	50	18	55	38
	11	50	18	55	40		11	0	18	57	40
13	1 M	0	18	55	38		0 A	5	19	0	43
	8	56	19	5	37		1	15	19	2	46
	9	57	19	2	39		2	10	19	2	48
	10	50	19	4	43		3	12	19	1	46
	0 A	35	19	3	48		7	40	18	59	40
	1	10	19	3	49	18	0 M	30	18	57	35
	3	20	19	4	48		9	55	18	57	40
	5	30	18	59	43		11	5	18	59	43
	6	30	18	59	42		0 A	10	19	1	46
	9	10	18	57	41		1	5	19	2	48
	11	38	18	57	41		2	15	19	2	47
14	8 M	50	18	55	40		4	30	19	0	45
	10	10	18	55	40		9	45	18	58	41
	11	50	18	58	40½	19	0 M	30	18	58	42
	2 A	40	19	2	42		8	35	18	56	40
	7	25	18	58	38		10	0	18	56	40½
15	0 M	30	18	57	34		11	0	18	58	41
	8	55	18	55	34½		0 A	15	19	1	42
	9	55	18	55	37		1	35	19	4	44
	11	0	18	57	39		2	10	19	5	43
	0 A	20	19	1	41		3	0	19	5	42
	1	40	19	5	43		4	0	19	4	41
	3	15	19	4	42		7	10	19	1	40
16	0 M	5	18	57	40		9	4	18	47	38½
	9	40	18	55	40		9	5	18	43	38½
	11	45	18	58	42		9	7	18	43	38½
	1 A	0	19	0	43		9	25	18	31	38
	2	15	19	4	43		9	27	18	29	38
	5	45	19	0	42		11	40	18	47	38
	9	5	18	56	41	20	8 M	50	18	54	39

February.						February.					
D.	H.	M.	☉	′	Th.	D.	H.	M.	☉	′	Th.
20	9 M	55	18	54	40	24	11 M	15	18	56	45
	11	0	18	56	41		1 A	40	19	3	40
	0 A	25	19	1	41½		2	40	19	4	40
	1	15	19	4	42		3	20	19	2	40
	2	30	19	4	41½		4	0	19	1	39
	6	20	19	5	41		7	5	18	59	39
	9	25	18	53	40		9	15	18	49	40
21	1 M	20	18	56	40		11	58	18	57	40
	8	50	18	54	39	25	10 M	0	18	55	40½
	10	0	18	55	39		0 A	28	18	59	41
	12	0	18	58	39		1	55	19	3	41
	1 A	40	19	2	42		3	20	19	2	41
	2	30	19	1	41½		4	20	19	0	42
	4	30	18	59	38		6	25	18	59	42
	8	0	18	57	36		9	55	18	59	43
22	0 M	55	18	58	39	26	9 M	0	18	53	46
	9	5	18	55	40		10	0	18	53	48
	11	0	18	56	44		11	5	18	55	50
	1 A	0	19	0	48		0 A	18	19	0	52
	2	5	19	3	47½		1	30	19	3	54
	3	10	19	2	47		2	22	19	3	53
	5	15	18	59	46½		4	5	19	2	50
	9	25	18	58	46		8	0	18	58	49
23	0 M	25	18	58	45		11	53	18	58	48
	8	50	18	55	43	27	9 M	23	18	59	49
	9	55	18	55	44		10	10	19	1	50
	11	5	18	57	44		11	25	19	2	51
	0 A	13	19	1	43		1 A	25	19	9	52
	1	42	19	4	43		2	15	19	10	52½
	3	8	19	3	43		2	58	19	4	53
	5	22	18	59	43		3	56	19	3	52
	9	40	18	58	40		5	50	19	3	51
24	0 M	50	18	59	38		8	30	18	54	50
	10	0	18	55	44		9	8	18	52	49

February.

D.	H.	M.	°	′	Th.
28	o M	18	18	54	46
	10	25	18	53	43
	11	25	18	57	45
	o A	25	19	0	47
	1	10	19	3	49
	1	57	19	4	48
	7	30	18	59	46
	9	5	18	59	45
	11	45	18	58	44

March.

D.	H.	M.	°	′	Th.
1	8 M	48	18	58	45
	10	7	18	57	48
	11	10	18	59	50
	o A	38	19	3	50½
	1	50	19	4	51
	2	45	19	3	51
	4	7	19	0	47
	9	0	18	58	45
	11	26	18	57	43
2	8 M	35	18	55	44
	9	55	18	56	45
	11	15	18	58	47
	o A	25	19	1	49
	1	40	19	3	51
	2	10	19	3	51
	3	30	19	1	49
	4	50	19	0	47
	8	35	18	59	46
3	o M	23	18	57	43
	8	20	18	54	40
	10	0	18	55	43

March.

D.	H.	M.	°	′	Th.
3	11 M	5	18	57	45
	o A	20	19	3	46½
	1	7	19	7	48
	2	0	19	4	49
	3	5	19	2	48
	8	20	18	58	43½
	11	55	18	54	41½
4	9 M	30	18	54	42½
	11	0	18	56	44
	o A	10	19	1	46
	1	43	19	4	45½
	2	40	19	4	46
	4	30	19	2	45½
	6	50	18	59	43½
	10	10	18	57	42½
5	o M	55	18	57	43
	9	0	18	55	42½
	11	10	18	59	45½
	o A	28	19	4	46½
	1	50	19	5	47
	2	40	19	6	46
	3	56	19	4	44
	7	15	19	0	42½
6	o M	45	18	58	42
	8	40	18	56	42
	9	30	18	56	43
	11	23	19	0	43½
	o A	10	19	2	43½
	1	25	19	4	43
	2	0	19	5	42½
	4	0	19	3	42
	6	20	19	0	42½
	9	40	18	58	43
	11	53	18	57	40½

March.						March.					
D.	H.	M.	☉	′	Th.	D.	H.	M.	☉	′	Th.
7	9 M	15	19	16	42	10	2 A	45	19	2	44
	9	50	19	12	43		3	35	19	1	43½
	11	25	19	3	45		4	32	19	0	44½
	0 A	19	19	12	46		7	0	18	59	41
	0	43	19	8	47		11	47	18	59	36
	1	10	19	4	46½	11	10 M	10	18	58	42½
	2	15	19	3	47½		11	7	19	0	43
	3	0	19	5	45½		12	0	19	1	43
	5	10	19	2	42½		1 A	15	19	2	44½
	7	50	18	59	40		2	35	19	1	44
8	0 M	10	18	57	39		7	32	18	59	40
	8	38	18	58	40	12	0 M	50	18	59	36
	10	0	18	57	43		8	47	18	57	37½
	11	20	18	59	45		10	30	18	59	43
	0 A	15	19	0	46		0 A	28	19	4	47
	1	26	19	1	47		1	55	19	5	49½
	2	20	19	0	46½		3	15	19	3	47½
	4	40	18	58	43		5	5	19	1	46½
	6	30	18	58	42	13	0 M	22	18	59	40
9	0 M	5	18	54	43		8	56	18	57	42
	8	30	18	57	40		10	0	18	59	45
	9	55	18	55	41		11	20	19	3	48½
	11	55	19	2	45		0 A	25	19	6	49½
	1 A	12	19	4	48		1	5	19	7	51
	2	5	19	4	49		1	28	19	7	52
	4	7	18	59	48½		6	45	18	59	46
	6	35	18	58	46	14	1 M	17	18	59	42
	8	50	18	59	46		8	45	18	56	48
	11	30	19	0	44½		10	0	18	57	51
10	9 M	20	18	58	44		11	20	18	59	52
	10	15	18	59	44		0 A	52	19	4	53
	11	30	19	2	42		2	20	19	5	53
	0 A	52	19	3	42		3	5	19	3	53
	1	30	19	4	42½		5	35	19	0	51

March.						March.					
D.	H.	M.	°	′	Th.	D.	H.	M.	°	′	Th.
14	9 A	5	18	59	50	19	8 M	40	18	54	37
15	0 M	7	18	59	49½		10	15	18	56	42
	8	30	18	55	48		11	20	19	0	43½
	10	10	18	54	49		0 A	45	19	7	43½
	11	5	18	56	50		1	22	19	14	42½
	0 A	20	19	0	51		1	58	19	13	42
	1	42	19	1	51		2	18	19	11	41½
	2	35	19	1	51		3	10	19	9	41
	3	30	19	0	50½		4	0	19	8	41
	11	55	18	57	50		5	15	18	58	41½
16	8 M	30	18	53	50½		5	45	18	54	41½
	10	0	18	54	51		6	33	18	58	43
	11	10	18	58	52		7	17	19	0	44
	0 A	16	19	2	53		11	55	18	46	46
	1	15	19	4	49	20	7 M	55	18	54	45½
	2	20	19	5	47		8	46	18	54	47
	3	55	19	1	47½		9	46	18	56	48½
	6	20	18	59	45		10	46	18	58	49
	9	5	18	58	43		11	46	19	2	49
17	0 M	35	18	59	40		1 A	0	19	11	48½
	8	5	18	54	39		1	46	19	9	48
	9	10	18	53	43		2	58	19	8	49
	10	15	18	55	45½		3	59	19	6	47½
	11	20	19	0	48		5	0	19	2	47
	0 A	25	19	4	49		6	0	19	0	45
	1	35	19	7	44		8	30	18	55	44½
	4	0	19	2	46	21	1 M	12	19	4	39½
	8	45	18	58	40½		8	55	18	56	40½
18	0 M	10	18	57	39½		10	0	18	55	42½
	9	50	18	55	43		11	0	18	59	42½
	11	0	18	59	44		0 A	10	19	3	43½
	4 A	56	19	7	40		1	5	19	5	44½
	6	37	18	54	39½		1	50	19	6	46
19	0 M	10	18	55	37		2	50	19	4	45½

An Aurora Bor.

March.						March.					
D.	H.	M.	°	′	Th.	D.	H.	M.	°	′	Th.
21	4 A	0	19	1	45	24	9 A	5	19	0	45
	5	30	18	58	43	25	0 M	35	19	1	41
	8	5	18	57	40		10	0	18	58	45½
	11	50	18	57	37½		11	0	19	0	46½
22	9 M	0	18	54	44		0 A	5	19	2	48
	10	0	18	56	46		1	45	19	4	52
	11	0	19	0	48½		2	30	19	3	51½
	12	0	19	3	52½		4	35	19	1	51
	1 A	0	19	6	52		6	43	19	0	49
	1	30	19	6	52½		9	38	18	59	48
	2	0	19	6	53	26	0 M	15	18	59	47½
	3	0	19	6	54		8	30	18	55	47
	4	30	19	8	52		9	20	18	56	48
	7	53	18	48	48		10	5	18	58	49
	9	0	18	26	48½		11	10	19	3	50
23	0 M	50	18	53	44		0 A	5	19	6	51
	9	0	18	59	48		1	12	19	7	51½
	10	0	19	0	50		1	45	19	6	52
	11	0	19	2	53		3	0	19	2	52½
	12	0	19	4	54½		3	50	19	0	52½
	1 A	0	19	5	55		6	56	18	59	49
	2	0	19	5	56		9	2	18	59	46½
	3	0	19	4	57	27	0 M	5	18	59	44
	4	0	19	2	56		8	12	18	53	48
	5	0	19	1	54		9	5	18	52	50
	9	0	18	59	50		10	4	18	56	51½
24	0 M	38	18	58	47		11	15	19	2	53½
	8	54	18	54	50		0 A	10	19	5	55
	10	5	18	56	50		1	15	19	7	57
	11	3	19	0	50½		2	50	19	6	56½
	0 A	2	19	4	52		4	0	19	3	57
	1	5	19	5	51		5	0	18	59	56
	2	2	19	7	51½		6	25	18	59	54
	3	1	19	4	52½		9	40	18	58	50

March.

D.	H.	M.	°	′	Th.
28	0 M	40	18	58	49
	8	15	18	52	49
	9	15	18	54	49½
	10	0	18	55	50½
	0 A	2	19	3	51
	1	3	19	7	52
	1	47	19	8	52½
	3	12	19	6	52½
	4	20	19	3	52
	5	5	19	1	52
	8	0	18	59	50
	9	10	18	54	49
29	0 M	15	18	58	47
	8	10	18	50	49
	9	10	18	51	48½
	10	10	18	54	51
	11	20	19	1	52
	0 A	32	19	7	52
	1	45	19	9	52
	2	15	19	9	52
	3	4	19	6	51
	4	5	19	2	48½
30	0 M	10	18	59	40
	8	7	18	52	41
	9	5	18	52	41
	10	20	18	56	43
	11	15	19	0	45
	0 A	20	19	6	45½
	1	15	19	8	46
	1	57	19	8	46½
	3	10	19	6	45
	4	12	19	3	43
	5	30	19	1	42
	9	35	18	59	37

March.

D.	H.	M.	°	′	Th.
31	0 M	10	18	59	35½
	8	25	18	54	35
	9	15	18	53	36
	10	10	18	54	37½
	11	5	18	58	40
	0 A	10	19	5	42
	1	5	19	8	43
	1	35	19	9	43½
	2	22	19	7	43½
	4	10	19	3	43½
	8	10	19	0	40

April.

D.	H.	M.	°	′	Th.
1	0 M	40	18	59	37
	9	50	18	55	50½
	11	0	18	58	55
	0 A	2	19	2	55
	1	30	19	6	54½
	2	0	19	6	55
	3	2	19	4	54
	5	15	19	0	54
	6	5	18	59	52½
	9	45	18	59	48
2	0 M	40	18	58	45
	7	50	18	53	44
	9	10	18	54	48½
	10	0	18	56	51
	0 A	10	19	3	55
	1	3	19	5	57
	1	0	19	6	56½
	2	10	19	6	56
	3	0	19	5	55

April.						April.					
D.	H.	M.	°	′	Th.	D.	H.	M.	°	′	Th.
2	4 A	0	19	2	53½	5	1 A	30	19	16	58
	4	56	19	1	53		2	20	19	19	57
	7	20	18	59	47		4	12	19	12	56
3	0 M	35	18	58	41		7	30	19	1	52
	8	10	18	54	43	6	0 M	11	19	1	48
	9	15	18	54	48½		8	10	18	54	50
	10	0	18	56	51		9	9	18	55	50½
	11	4	19	0	53		10	12	18	58	51
	0 A	2	19	4	55		11	25	19	3	51
	1	0	19	7	56		0 A	10	19	4	49½
	1	20	19	7	56½		1	30	19	5	47
	4	11	19	2	56		2	15	19	4	46
	6	15	18	58	52		3	18	19	2	45
	8	43	18	58	46		5	18	18	58	46½
4	0 M	40	18	58	42	7	1 M	27	18	58	42
	8	15	18	51	47		8	25	18	53	43½
	9	10	18	51	48		9	16	18	54	46
	10	6	18	54	50		10	20	18	57	49½
	11	7	19	0	52½		11	5	18	59	51
	12	0	19	5	50½		0 A	16	19	4	50½
	1 A	0	19	6	52		1	0	19	5	51
	1	30	19	7	53		2	1	19	5	51
	2	8	19	7	54		2	40	19	3	52
	3	13	19	4	54½		9	1	18	59	44½
	4	20	19	1	54	8	0 M	25	18	59	42½
	5	20	19	0	53		9	48	18	58	47
	8	45	18	54	50		11	3	19	0	50
5	0 M	5	18	53	49½		0 A	10	19	3	51
	8	10	19	24	51		1	45	19	5	49
	9	8	19	18	53		2	35	19	4	49
	10	15	19	9	56		4	10	19	2	46
	11	10	19	10	57½		7	46	19	0	48
	0 A	7	19	15	58	9	0 M	37	18	59	48
	1	0	19	15	58		9	9	18	54	51½

April.						April.					
D.	H.	M.	°	′	Th.	D.	H.	M.	°	′	Th.
9	10 M	5	18	56	54	12	2 A	0	19	7	54
	11	6	18	59	54½		3	1	19	5	54½
	0 A	5	19	4	57		9	5	19	0	48
	1	5	19	9	57	13	0 M	23	18	56	45
	1	40	19	8	56		9	30	18	57	50
	3	10	19	6	55		10	8	18	59	51½
	4	7	19	3	54½		11	7	19	3	53½
	6	45	19	0	53½		0 A	12	19	7	55
	11	40	18	59	46½		1	30	19	12	56
10	9 M	10	18	53	47		1	58	19	14	57
	10	1	18	55	48½		2	10	19	15	57
	11	3	18	59	49½		2	24	19	13	57
	0 A	2	19	1	51		3	10	19	8	57
	1	10	19	6	53		4	20	19	6	56
	1	43	19	7	53		5	35	19	4	54½
	5	55	19	1	50		6	20	19	2	53
	7	50	18	59	46		9	22	18	44	49
	10	0	18	57	44	14	0 M	57	18	53	44
11	0 M	55	18	57	42		9	0	18	52	48
	9	20	18	58	49		10	3	19	0	49
	10	8	19	0	51½		11	4	19	4	50
	11	15	19	4	51½		0 A	12	19	7	51
	0 A	10	19	6	51½		1	5	19	5	51½
	1	1	19	8	53		1	35	19	9	51½
	1	40	19	8	54		2	0	19	8	52
	2	10	19	7	54		3	0	19	2	51
	3	1	19	5	53		8	0	18	57	49
	11	40	19	0	47	15	0 M	14	18	57	45
12	8 M	10	18	55	47½		9	10	18	56	47
	9	10	18	56	49		10	11	18	56	47½
	10	3	18	58	50½		11	10	18	58	50
	11	2	19	3	51		0 A	3	19	1	50
	0 A	11	19	6	52½		1	25	19	5	52
	1	25	19	7	54		2	0	19	6	51½

April.						April.					
D.	H.	M.	☉	′	Th.	D.	H.	M.	☉	′	Th.
15	5 A	12	19	1	50	19	1 A	40	19	7	51
	7	8	18	58	49		9	20	19	0	48
	9	55	18	58	44	20	0 M	17	19	0	47½
16	0 M	48	18	57	41		9	15	18	56	54
	9	5	18	58	41½		11	5	19	0	56
	10	0	19	0	42½		0 A	54	19	3	59
	11	10	19	5	44		1	38	19	4	59½
	0 A	5	19	6	45½		2	5	19	2	60½
	1	6	19	6	48		8	6	18	58	52
	2	0	19	6	48½		11	45	18	57	50½
	2	59	19	5	47	21	8 M	20	18	52	54
	4	0	19	2	47		9	10	18	54	55½
	5	5	19	2	46		10	5	18	56	56½
	10	2	18	32	42		11	20	18	59	59
17	1 M	20	18	55	40		0 A	10	19	4	62
	9	50	18	58	50		1	2	19	6	62
	11	1	19	2	50		1	42	19	7	63
	0 A	10	19	5	53		9	3	18	59	53
	1	30	19	8	53		11	50	18	58	49½
	6	0	19	2	49	22	8 M	35	18	55	55½
	9	8	18	58	43		9	15	18	55	56
18	0 M	35	18	59	41		11	5	18	56	60½
	8	30	18	56	46		0 A	2	19	1	60
	10	10	18	58	48½		1	16	19	4	63
	11	17	19	3	50½		2	10	19	4	62½
	1 A	0	19	7	50½		9	25	19	0	54
	1	40	19	8	50½	23	0 M	26	18	59	51
	2	15	19	7	50½		8	10	18	51	52
	3	10	19	5	49½		9	4	18	53	53½
	9	35	19	1	41		10	55	18	58	57
19	0 M	25	19	0	38		1 A	12	19	4	59½
	8	50	18	54	44½		1	40	19	4	60
	11	5	19	1	49		3	5	19	3	61
	1 A	0	19	7	50½		7	8	18	59	51

April.

D.	H.	M.	°	′	Th.
24	0 M	4	18	59	42
	7	45	18	55	45
	9	10	18	57	47
	10	55	19	2	49
	1 A	25	19	6	52
	3	15	19	5	51
	7	8	18	55	44
	9	3	18	52	41
25	0 M	8	18	46	40
	8	45	18	57	48
	9	20	19	3	52
	11	8	19	6	55
	0 A	55	19	8	56
	1	40	19	9	56
	2	15	19	8	56
	3	20	19	5	55
	5	12	18	59	54
	8	54	18	58	48½
26	0 M	10	18	57	46
	8	0	18	54	50
	9	20	19	0	53
	11	10	19	6	56
	0 A	45	19	9	57½
	1	25	19	10	58
	2	0	19	8	56
	4	55	19	0	57
	8	55	18	59	52
	11	42	18	58	50
27	8 M	5	18	50	55
	9	7	18	52	56
	11	4	19	0	60
	1 A	6	19	5	60
	2	8	19	4	59
	3	12	19	2	58

April.

D.	H.	M.	°	′	Th.
27	7 A	12	18	58	53
28	1 M	10	18	57	49
	8	0	18	50	50½
	9	15	18	53	51½
	10	56	19	2	53
	0 A	2	19	6	55
	1	8	19	6	55
	1	40	19	7	55½
	2	20	19	5	56
	3	20	19	3	55
	9	15	18	59	52
29	1 M	2	18	59	51
	9	0	18	54	54½
	11	2	18	58	58½
	0 A	55	19	4	60
	1	32	19	3	60½
	5	4	18	59	57
	9	26	18	59	47
	11	42	19	1	44
30	8 M	0	18	55	51½
	8	58	18	56	54
	11	6	19	3	61
	1 A	2	19	6	63½
	1	50	19	6	63½
	2	52	19	4	62
	4	7	19	2	60½
	5	15	19	0	58
	7	55	19	0	51

May.

D.	H.	M.	°	′	Th.
1	8 M	40	18	56	51
	10	56	19	0	57½

May.						May.					
D.	H.	M.	°	′	Th.	D.	H.	M.	°	′	Th.
1	1 A	30	19	5	60	5	2 A	50	19	7	56
	4	3	19	2	57½		5	0	19	2	54
	9	2	18	59	48½	6	0 M	25	19	1	46
	11	55	18	58	46		9	18	18	56	54
2	7 M	48	18	54	51		11	1	19	1	56
	9	7	18	54	55		0 A	10	19	3	58
	11	7	18	59	58		0	55	19	4	58½
	1 A	28	19	3	59		1	35	19	4	60
	2	13	19	2	58		7	15	18	59	55
	5	1	18	59	54	7	1 M	5	19	2	48
	8	0	18	58	48		8	10	18	49	54½
3	0 M	15	18	58	46		9	10	18	54	57
	8	7	18	52	53		11	5	19	3	60
	9	30	18	53	54½		0 A	15	19	6	63
	0 A	59	19	0	55½		1	2	19	8	63
	1	47	19	3	55½		1	35	19	7	64
	2	45	19	2	55½		3	4	19	4	62½
	4	10	19	0	56		5	0	19	0	61
	11	58	18	59	51½		7	14	18	58	58½
4	8 M	15	18	51	56		10	0	18	58	56
	9	16	18	52	58	8	0 M	20	19	1	54
	11	2	19	4	64		8	15	18	54	56
	0 A	20	19	6	64		9	8	18	57	57
	1	5	19	7	64½		11	2	19	2	60½
	1	55	19	7	63		1 A	4	19	4	61½
	3	0	19	8	61½		3	10	19	1	63½
	4	58	19	3	57		9	20	18	59	57
	9	30	18	39	53	9	0 M	2	18	58	55
5	0 M	21	18	46	53		8	30	18	58	59
	8	25	18	56	52		9	20	18	54	60½
	9	35	18	59	53		10	18	18	58	63
	11	0	19	2	55		11	35	19	3	64½
	0 A	55	19	8	54		0 A	18	19	8	63½
	1	40	19	9	55½		1	30	19	7	65

May.						May.					
D.	H.	M.	°	′	Th.	D.	H.	M.	°	′	Th.
9	3 A	8	19	3	64	12	5 A	0	18	59	64
	5	2	18	58	61		9	40	18	58	58
	9	5	18	58	55	13	0 M	3	18	58	57
10	0 M	25	18	56	53		8	30	18	53	60½
	8	5	19	3	55		11	2	18	59	64
	9	20	18	59	59		0 A	45	19	3	64½
	11	15	19	2	59		1	30	19	12	64
	0 A	50	19	4	61½		2	13	19	8	64½
	1	15	19	6	62		5	12	19	1	62
	1	40	19	6	62		9	58	18	55	57
	3	20	19	4	61½	14	0 M	52	18	56	55½
	9	25	18	56	52½		8	10	18	54	58
11	0 M	15	18	52	51		9	12	18	56	58½
	8	5	18	52	55		11	13	19	0	62
	9	25	18	53	57		1 A	15	19	4	65
	11	20	18	55	58½		2	7	19	5	64
	1 A	10	18	54	58		3	12	19	3	63
	1	27	19	0	57½		7	13	19	0	57½
	1	37	19	2	57½		9	10	18	59	55
	2	15	18	47	57½		11	45	19	0	54
	3	0	18	58	59½	15	8 M	0	18	55	57½
	6	3	18	56	58		9	5	18	54	58½
	9	7	19	8	55		11	10	19	2	62
	9	8	18	58	55		0 A	30	19	8	65
	9	9½	18	48	55		1	20	19	9	66
	9	28½	18	53	55		3	15	19	7	66
	9	32½	18	46	55		7	10	19	0	61
12	0 M	50	18	51	52	16	0 M	30	19	1	54
	7	55	18	51	57		8	10	18	53	60
	9	20	18	53	59		9	15	18	53	64
	11	15	19	1	62		11	28	18	59	69½
	0 A	40	19	2	66		1 A	15	19	6	72
	1	12	19	3	65		2	0	19	5	72½
	3	0	19	3	65½		3	20	19	0	72½

An Aurora Bor.

May.						May.					
D.	H.	M.	°	′	Th.	D.	H.	M.	°	′	Th.
16	7 A	10	18	58	65	21	9 M	15	18	57	56
	8	40	18	58	62		11	0	19	1	61½
17	0 M	50	18	57	56		0 A	40	19	5	65
	8	20	18	53	56		1	24	19	7	66
	11	5	19	2	61		1	55	19	6	66
	0 A	40	19	8	62		6	3	19	1	65
	2	35	19	6	63		9	15	19	1	58
	8	45	18	59	52	22	0 M	5	18	56	54
18	0 M	5	18	57	49		8	15	18	52	56
	8	13	18	56	52½		9	45	18	56	59
	9	15	18	57	53		11	2	19	2	59
	11	0	19	3	56		1 A	0	19	7	62
	1 A	20	19	7	57		1	30	19	6	61½
	2	10	19	6	57½		3	25	19	2	62
	6	50	19	0	52		5	35	18	58	61
	9	0	19	2	47		9	20	19	0	54½
19	1 M	0	19	1	41½	23	0 M	25	19	0	52
	8	0	18	58	50		8	10	18	52	57½
	9	10	19	0	52		11	15	19	2	66
	11	10	19	6	55		0 A	5	19	6	67
	0 A	50	19	4	58		0	55	19	7	68
	1	40	19	7	58½		1	30	19	7	68
	2	20	19	6	59		2	5	19	8	67½
	3	2	19	4	60		6	55	18	57	58½
	5	20	19	1	54		9	15	18	58	54
20	0 M	10	19	0	44		11	50	18	56	54½
	9	22	18	58	55	24	8 M	48	18	55	56
	10	26	19	2	57		11	5	19	7	57½
	0 A	30	19	5	61½		0 A	13	19	9	60
	1	40	19	6	61½		1	7	19	11	63
	2	35	19	6	62		1	48	19	9	64½
	9	15	19	2	48½		3	6	19	7	66
21	1 M	20	19	3	43½		9	2	19	0	60½
	8	15	18	56	53	25	0 M	40	18	58	54

May.					
D.	H.	M.	☉	′	Th.
25	8 M	20	18	56	58
	9	32	19	0	63
	11	15	19	8	70
	0 A	27	19	10	72
	1	20	19	9	72½
	3	10	19	6	73½
26	0 M	15	18	59	56
	8	5	18	54	60
	9	10	18	58	61½
	10	15	19	2	63
	12	0	19	8	64
	0 A	25	19	9	64½
	5	15	19	4	57
	6	50	19	1	53
	9	40	19	0	46
27	0 M	40	19	2	43
	7	55	18	53	50
	11 A	58	19	3	51
28	8 M	55	18	54	57½
	11	10	19	1	61
	0 A	35	19	6	63½
	1	17	19	7	63
	4	25	19	3	63
	9	12	19	1	55
29	0 M	15	19	0	52
	8	28	18	56	57½
	9	30	18	58	60½
	10	25	19	0	60
	11	0	19	3	59
	0 A	15	19	7	59
	1	15	19	9	57
	2	15	19	7	53
	3	10	19	5	53
	5	0	19	3	53½

May.					
D.	H.	M.	☉	′	Th.
29	9 A	30	18	56	47
	11	58	18	55	41
30	8 M	20	18	56	49
	11	7	18	59	53
	3 A	5	19	3	56
	9	15	19	1	49½
	11	50	18	57	46
31	8 M	45	18	54	54
	9	30	18	53	59
	3 A	55	19	0	63½
	9	5	18	55	56

June.					
D.	H.	M.	☉	′	Th.
1	0 M	23	18	56	55
	9	5	18	51	59½
	11	0	19	0	61½
	0 A	20	19	1	62½
	1	10	19	1	63
	2	15	19	0	64
	9	30	18	59	54
2	0 M	15	18	56	52
	8	35	18	52	57
	11	12	19	0	63
	11	45	19	3	63½
	9 A	20	18	55	55
3	0 M	40	18	56	54½
	9	0	18	53	57
	11	14	18	58	56
	0 A	58	19	2	59½
	1	30	19	3	59
	3	2	19	1	60
	5	30	18	58	58

June.						June.					
D.	H.	M.	°	′	Th.	D.	H.	M.	°	′	Th.
3	10 A	20	18	55	54	7	1 A	15	19	10	63½
4	0 M	50	18	54	53		11	50	18	59	53½
	9	15	18	51	57½	8	7 M	6	18	53	53
	11	15	18	56	58½		9	10	18	57	60
	1 A	30	19	1	58½		11	30	19	3	63
	2	20	18	57	58	9	0 M	15	19	0	54
	3	12	19	0	57½		8	50	18	54	60½
	4	15	19	2	58½		11	48	19	6	65
	4	45	19	4	58		1 A	0	19	8	66
	7	30	19	0	54		1	35	19	9	66½
	9	30	19	1	50		3	10	19	6	66½
5	0 M	13	19	0	48½		5	0	19	3	64
	8	50	18	54	58		9	10	19	1	56½
	0 A	15	19	4	57	10	0 M	30	19	1	52½
	1	0	19	7	57		9	0	18	54	68
	1	47	19	8	58½		11	1	19	0	71½
	9	0	19	2	54½		1 A	12	19	6	72½
6	0 M	15	19	1	53		1	37	19	8	73½
	8	50	18	56	57		2	1	19	7	73½
	10	12	18	59	56		5	30	19	1	66
	11	15	19	2	57		7	15	19	0	63
	0 A	10	19	4	57		10	0	19	0	58
	1	12	19	7	58	11	0 M	52	19	0	57
	1	35	19	8	58		8	5	18	53	59
	3	0	19	4	60		9	4	18	53	61
	5	20	19	1	60		10	2	18	56	62
	7	15	18	58	57½		11	20	18	59	65
	8	30	19	0	56		1 A	2	19	6	65
7	0 M	2	19	0	53		1	32	19	7	65½
	8	30	18	52	58		3	30	19	5	59
	9	0	18	53	59		9	2	19	1	53
	10	1	18	58	60½	12	0 M	25	19	1	53
	11	12	19	5	62		7	48	18	50	56
	0 A	45	19	10	63		9	5	18	54	57

June.						June.					
D.	H.	M.	°	′	Th.	D.	H.	M.	°	′	Th.
12	11 M	10	19	3	60½	16	11 M	8	19	0	66½
	1 A	2	19	8	62½		4 A	55	19	0	67
	5	15	19	2	60		9	2	18	59	59
	9	7	19	0	54½	17	0 M	40	18	57	55
13	8 M	6	18	57	59½		8	9	18	55	62
	9	10	18	57	61		9	0	18	56	62
	11	35	19	6	62½		10	24	18	58	67
	1 A	15	19	8	61½		11	15	19	2	68½
	1	50	19	7	62		0 A	13	19	3	69
	3	0	19	6	62½		1	0	19	5	69½
	9	33	19	2	53½		1	30	19	7	70½
14	0 M	15	19	3	52		5	3	19	3	71½
	8	7	18	56	59		7	0	18	57	68
	11	20	19	2	65½		9	27	18	59	64½
	1 A	0	19	6	67	18	0 M	45	19	0	62
	1	33	19	7	66		7	42	18	50	65½
	3	10	19	5	67		8	52	18	51	70
	9	20	18	58	56½		10	7	18	56	73
15	0 M	1	18	59	54		11	0	19	1	75
	7	45	18	58	59		12	0	19	4	75½
	8	56	18	56	62½		1 A	2	19	4	77
	10	15	18	59	64		1	40	19	5	76
	11	20	19	4	67		2	55	19	4	76½
	0 A	25	19	6	65		4	7	19	1	75
	1	0	19	7	65		5	35	19	0	74
	1	30	19	8	63½		7	20	18	59	71
	2	3	19	8	64		9	35	18	55	68
	3	7	19	5	62	19	0 M	15	18	56	64
	5	10	19	2	60		7	47	18	58	68
	7	30	18	59	59		9	5	18	58	72½
	9	28	18	56	58½		10	4	18	56	75
16	0 M	44	18	57	58½		11	20	19	0	77
	7	40	18	55	61½		0 A	20	19	5	79
	8	50	18	58	63½		1	14	19	4	78

June.						June.					
D.	H.	M.	☉	′	Th.	D.	H.	M.	☉	′	Th.
19	3 A	20	19	3	78½	22	9 A	12	19	2	67
	5	10	19	0	76	23	8 M	0	18	56	65
	6	8	18	57	74		9	15	18	58	68½
	7	10	18	57	71½		11	10	19	3	68
	9	38	18	58	64		1 A	3	19	8	67½
20	0 M	18	18	58	60		1	40	19	7	67½
	8	20	18	57	68½		3	16	19	5	67
	9	10	18	57	70		5	35	19	0	66
	11	5	19	1	75½		9	14	19	1	62
	0 A	40	19	6	76½	24	0 M	32	19	1	58
	4	2	19	4	74		8	0	18	56	63
	7	1	18	57	69½		9	20	18	57	65½
	9	3	18	57	64		11	6	19	3	69
21	0 M	25	18	56	61		1 A	5	19	7	71
	8	0	18	56	71		1	48	19	8	70
	9	10	19	2	73		5	20	19	3	68
	10	6	19	4	73		9	0	19	1	61½
	10	45	19	5	74	25	0 M	50	19	1	56
	11	16	19	6	75½		8	0	18	56	62
	0 A	2	19	5	77		8	55	19	1	63
	0	32	19	6	77½		11	20	19	11	68
	1	7	19	7	78½		0 A	40	19	14	68½
	1	31	19	8	78½		1	15	19	13	70
	2	5	19	7	78		2	56	19	9	70½
	2	32	19	6	79		5	0	19	1	68
	3	5	19	5	77		7	16	19	1	64
	3	35	19	4	76½		9	30	19	2	63
	4	21	19	1	75	26	0 M	1	19	2	61
22	0 M	31	19	1	61½		8	0	18	53	65
	8	0	18	56	64½		8	45	18	55	65½
	8	50	19	0	65½		10	57	19	5	69
	10	10	19	3	70		11	50	19	9	72
	11	5	19	5	71		0 A	31	19	11	72½
	1 A	25	19	8	74		1	10	19	11	72

June.					
D.	H.	M.	°	′	Th.
26	7 A	0	19	1	68
27	0 M	18	19	2	62
	6	4	18	58	62
	8	30	18	55	65
	9	2	18	54	67
	10	20	18	57	69
	11	40	19	4	68½
	0 A	50	19	9	70
	1	38	19	8	70
	3	10	19	8	68
	7	20	18	59	61
	9	12	19	6	59
	11	40	18	51	57½
28	0 M	10	18	50	57
	8	14	18	56	61
	9	1	18	57	63
	11	1	19	1	67
	0 A	35	19	7	68
	1	15	19	10	67½
	2	15	19	10	68½
29	0 M	14	19	0	57
	7	55	19	1	60
	8	58	18	59	63
	11	0	19	5	67
	0 A	35	19	9	69½
	1	15	19	11	67
	2	12	19	12	67½
	5	4	19	4	64½
	7	10	19	0	61
30	0 M	20	19	0	56
	8	3	18	56	58
	9	30	18	55	62
	11	5	19	0	64
	3 A	55	19	4	62½

June.					
D.	H.	M.	°		Th.
30	9 A	0	19	0	58
	9	45	19	0	58

July.					
D.	H.	M.	°	′	Th.
1	0 M	25	19	0	57½
	9	5	18	52	60½
	11	4	18	57	60
	0 A	12	19	0	61
	1	0	19	3	61
	1	35	19	3	60½
	3	0	19	2	60
	5	5	19	1	58
	7	0	19	0	56½
2	7 M	58	18	54	57
	8	50	18	53	59
	11	15	18	57	63
	1 A	15	19	1	66
	1	52	19	2	67
	3	5	19	3	65½
	5	4	19	1	63
	9	15	19	0	59
3	0 M	8	18	49	57
	8	20	18	45	60
	9	15	18	53	62
	11	0	19	1	67
	1 A	3	19	5	71
	3	0	19	4	75
	7	30	18	59	67
4	2 M	0	18	56	56
	8	25	18	54	63
	9	10	18	57	64
	11	0	19	0	66

July.						July.					
D.	H.	M.	°	′	Th:	D.	H.	M.	°	′	Th.
4	1 A	25	19	4	69½	9	9 M	15	18	59	73
	2	20	19	6	71		11	20	19	1	76½
	3	0	19	6	70½		0 A	40	19	7	78
	5	5	18	52	68		1	20	19	6	78
	7	45	19	0	63		2	10	19	12	79
	9	10	19	0	59		6	50	19	0	73
5	1 M	3	19	2	54		9	20	18	49	68
	8	0	18	54	62		9	40	18	53	67
	10	57	19	1	68	10	8 M	0	18	53	72
	0 A	58	19	6	71		9	15	18	54	78½
	2	10	19	5	72		11	5	18	59	82½
	4	7	18	57	72		7 A	3	19	1	73
	11	30	18	59	62		9	25	19	0	68
6	8 M	20	18	56	68	11	8 M	12	18	54	68
	9	25	18	59	71½		11	20	19	2	72
	11	20	19	4	75½		1 A	0	19	7	72
	1 A	15	19	2	78		1	45	19	8	72½
	2	5	19	2	78½		3	20	19	7	71½
	3	20	19	3	78½		9	22	19	2	61
	5	15	19	0	77	12	0 M	15	19	3	58
	9	12	18	58	70		7	55	19	0	66
7	0 M	32	18	58	67		9	10	19	1	69
	8	17	18	50	73		0 A	20	19	11	70
	9	18	18	52	76		9	5	19	3	65
	11	20	18	57	79	13	8 M	20	18	53	68½
	1 A	30	19	2	81		11	12	19	2	73
	3	0	19	0	80		1 A	23	19	9	74½
8	0 M	5	18	57	64		2	0	19	10	76½
	9	10	18	54	77		9	10	18	58	66
	0 A	58	19	4	81	14	0 M	30	19	0	60½
	1	54	19	5	80½		8	25	18	55	67
	5	0	19	4	74		9	10	18	58	68½
	9	53	19	0	67		11	30	19	7	72
9	8 M	0	18	58	69		1 A	20	19	8	74

July.						July.					
D.	H.	M.	°	′	Th.	D.	H.	M.	°	′	Th.
14	2 A	30	19	7	74		11 A	40	19	1	63
	5	0	19	4	73		8 M	0	18	57	67½
	9	5	19	2	67		9	18	19	0	70
15	0 M	15	18	57	61		11	15	19	3	74
	9	5	18	58	70		1 A	35	19	7	73
	11	12	19	4	73		3	30	19	4	72
	1 A	3	19	9	74½		7	0	19	1	68½
	1	45	19	8	75		11	50	19	3	61½
	5	0	19	3	71	21	8 M	5	18	57	66
	7	15	19	2	67		11	20	19	5	72½
16	0 M	30	19	2	62		1 A	20	19	8	73½
	7	53	18	57	68		2	15	19	9	74
	9	55	19	0	67	22	0 M	20	19	2	59½
	11	30	19	4	73		9	0	18	57	69
	1 A	4	19	7	75		10	58	19	2	74
	2	5	19	8	75½		5 A	0	19	3	75
	6	50	19	3	68	23	8 M	0	18	59	70
	9	15	19	5	65		9	5	19	0	72½
17	0 M	8	19	4	63½		11	5	19	4	77
	8	20	19	1	66		1 A	5	19	8	78
	11	18	19	8	71		1	53	19	9	78½
	4 A	10	19	9	72		3	15	19	4	78½
	7	0	19	1	66		5	16	19	0	78½
18	0 M	10	19	0	60		9	30	19	1	65
	8	0	18	58	64	24	0 M	10	19	1	61½
	9	7	18	59	66		7	46	18	57	66
	11	15	19	4	72		9	15	19	0	69½
	1 A	35	19	7	73		11	44	19	7	72
	2	15	19	6	73½		1 A	15	19	9	75
	9	35	19	0	65		3	0	19	7	74½
19	7 M	45	18	57	65½		6	12	19	2	71½
	9	25	19	2	71	25	0 M	2	18	57	61
	11	30	19	8	74½		8	20	18	54	68½
	5 A	2	19	2	75		9	35	18	57	70

July.					
D.	H.	M.	°	′	Th.
25	11 M	10	19	4	74
	1 A	20	19	11	77½
	1	50	19	12	78
	3	7	19	10	77
	9	30	19	1	67
	11	50	19	2	62
26	8 M	0	18	58	66½
	9	17	19	1	71½
	11	43	19	8	77½
	1 A	17	19	11	78½
	2	7	19	11	79
	11	40	19	1	63
27	8 M	15	18	55	66
	9	12	18	57	66½
	11	5	19	4	72
	1 A	2	19	12	72
	1	30	19	12	72
	2	56	19	11	71
	5	10	19	6	69½
28	3 M	20	18	59	55
	8	30	19	1	66
	9	25	19	1	67
	11	3	19	6	70½
	1 A	2	19	12	73
	2	5	19	14	72
	3	40	19	12	74
	5	12	19	12	70½
	9	20	19	4	62
	11	57	18	57	59½
29	8 M	25	18	57	66
	9	20	18	57	69
	11	10	19	1	72
	1 A	35	19	11	73
	2	40	19	13	74½

July.					
D.	H.	M.	°	′	Th.
29	4 A	40	19	11	72½
	7	10	19	7	69
	10	0	19	5	66
30	0 M	30	19	2	65
	8	0	19	4	65½
	8	50	19	1	68
	9	25	19	0	67½
	11	24	19	6	73
	1 A	15	19	9	74
	2	5	19	12	74½
	3	16	19	12	73
	5	25	19	9	71½
	6	54	19	6	68
	9	5	19	4	64
	11	45	19	3	62
31	7 M	58	18	57	63
	9	15	19	0	67
	11	5	19	9	63
	1 A	12	19	15	62
	1	35	19	16	62
	3	2	19	11	61½
	4	45	19	8	60
	7	2	19	5	60½
	9	23	19	5	58

Auguſt.					
D.	H.	M.	°	′	Th.
1	0 M	7	19	4	57
	8	30	18	58	62
	11	12	19	6	66
	2 A	7	19	11	68
2	0 M	10	19	1	57
	8	25	19	0	60

Auguſt.						Auguſt.					
D.	H.	M.	°	′	Th.	D.	H.	M.	°	′	Th.
2	11 M	35	19	6	65	7	0 M	10	18	55	59
	1 A	26	19	11	68		7	40	18	58	60½
	9	38	19	4	56½		9	7	18	59	63
3	8 M	0	18	59	58½		11	20	19	4	66
	11	15	19	2	66		1 A	12	19	9	67½
	1 A	9	19	8	68		9	15	18	56	68
	2	10	19	9	68½	8	0 M	4	18	58	65
	5	20	19	0	67		8	15	18	58	68½
	7	15	18	59	63½		9	20	18	59	69½
	9	45	19	0	59		11	35	19	4	73
4	0 M	10	18	59	56		1 A	2	19	7	73½
	7	45	18	56	58½		2	55	19	2	77
	8	48	18	56	61		6	45	18	58	72
	11	2	19	3	61	9	0 M	32	18	57	63
	1 A	22	19	9	61		8	25	18	58	64
	2	40	19	6	61		11	12	19	6	75
	5	5	19	1	61		1 A	30	19	8	76
	7	6	19	1	61½		9	47	18	58	65
	9	30	19	1	62	10	8 M	12	18	57	70
5	0 M	12	19	2	61		9	15	18	57	74
	9	8	19	0	66½		11	0	19	2	79
	11	10	19	4	63		0 A	50	19	4	80½
	0 A	58	19	6	69		1	51	19	5	81
	4	37	19	3	68		3	32	19	2	79
	7	0	18	58	65		9	2	18	58	67
	9	2	18	59	63	11	0 M	30	18	57	63
6	7 M	32	18	55	58		8	15	18	53	68½
	9	11	18	56	62		9	13	18	56	73
	11	15	19	4	65½		11	2	19	0	77
	0 A	44	19	8	69½		1 A	17	19	4	81
	1	31	19	8	67		3	10	19	4	80½
	3	18	19	4	66½		6	15	18	58	77
	5	25	19	0	65½	12	0 M	12	18	59	67
	9	20	18	58	60½		8	25	18	58	62

Auguſt.						Auguſt.					
D.	H.	M.	°	′	Th.	D.	H.	M.	°	′	Th.
12	10 M	46	19	4	65	16	9 A	40	18	51	63
	0 A	7	19	8	65		10	12	18	49	62½
	1	0	19	9	66	17	0 M	10	18	54	60
	2	30	19	7	67		8	30	18	56	64
	7	0	19	0	64		11	28	19	7	68½
13	0 M	28	19	1	60	An Aurora Bor.	1 A	20	19	9	71
	7	55	18	58	62		4	0	19	6	69½
	9	20	19	1	65		6	0	19	9	67
	11	21	19	9	70		7	2	18	58	65
	1 A	25	19	9	71		8	45	19	5	61
	3	10	19	7	71	18	0 M	23	18	58	55
	7	13	19	2	64		8	15	18	58	58
	9	25	19	2	59		9	32	19	0	63
14	0 M	30	19	2	55		10	58	19	5	67
	8	10	18	58	61		1 A	4	19	7	69
	9	20	18	59	62		3	20	19	4	68
	1 A	0	19	8	67		5	4	19	3	66½
	7	2	19	2	64		6	52	18	59	65
15	0 M	38	19	1	61	19	0 M	40	18	59	59
	7	50	18	57	62½		9	15	18	58	63½
	9	30	18	59	66		10	58	19	3	67
	11	15	19	3	69		1 A	5	19	4	69
	1 A	17	19	6	70		1	52	19	4	68½
	2	0	19	5	67		5	55	18	59	67
	5	30	19	2	64½		7	15	19	0	65
	9	10	19	3	63	20	0 M	42	19	1	60
16	0 M	2	19	2	60		8	16	18	54	60½
	8	4	18	56	60½		9	25	18	57	64
	9	47	18	59	65		11	7	19	4	65½
	11	10	19	4	67		0 A	40	19	7	67
	1 A	4	19	11	69½		2	0	19	6	67
	1	32	19	10	70		5	10	19	0	65
	3	0	19	10	71		9	12	18	59	61
	5	12	19	4	69	21	8 M	20	18	53	59½

Auguſt.						Auguſt.					
D.	H.	M.	°	′	Th.	D.	H.	M.	°	′	Th.
21	9 M	22	18	56	62	25	3 A	2	19	10	71½
	11	3	19	8	66½		9	30	19	3	60
	0 A	40	19	11	62	26	0 M	10	19	4	58
	3	32	19	2	65½		9	5	19	1	65
	5	20	18	59	63		11	10	19	5	70
	6	2	18	58	62		1 A	0	19	12	72
	9	12	18	59	59		2	15	19	14	72
22	0 M	15	19	1	54		5	7	19	5	68½
	8	3	18	55	57½		7	16	19	4	64
	11	10	19	7	62½		8	55	18	54	61
	0 A	54	19	9	63	27	9 M	15	19	1	63
	3	15	19	5	64		11	12	19	8	68
	6	53	18	59	60		0 A	40	19	13	69½
	9	20	19	0	56		1	30	19	14	70½
23	8 M	7	18	54	55		3	13	19	8	70½
	9	15	18	58	58		5	8	19	9	68½
	11	43	19	11	62		5	43	19	4	68
	1 A	0	19	14	66		7	15	19	4	64
	3	2	19	9	63		9	0	19	2	59½
	4	23	19	4	63½	28	0 M	5	19	7	56½
	5	54	19	3	62½		9	44	19	3	63
	9	15	19	4	58½		10	43	19	7	65
24	0 M	6	19	6	56		1 A	0	19	14	68
	8	20	19	3	59½		9	10	19	4	61
	10	8	19	9	63	29	10 M	25	19	6	65
	11	35	19	14	66½		1 A	30	19	13	67½
	1 A	9	19	24	67	30	0 M	25	19	4	51
	2	0	19	19	63		8	30	19	1	54
	4	55	19	8	62		1 A	15	19	15	62
	7	12	19	4	60		9	12	19	6	55
25	0 M	5	19	2	58	31	8 M	58	18	59	55½
	9	10	18	59	66		11	55	19	14	55
	11	20	19	9	70		1 A	14	19	16	55½
	1 A	15	19	12	72		5	15	19	5	57

August.						
D.	H.	M.		°	′	Th.
31	8	A	32	19	5	52½

September.						
D.	H.	M.		°	′	Th.
1	9	M	33	18	59	55
	0	A	59	19	12	59
	9		5	19	3	57½
2	10	M	0	19	0	59½
	1	A	4	19	9	63
	2		50	19	12	62
	5		35	19	8	59
	6		43	19	1	58
	9		44	19	3	60
3	9	M	35	19	1	64
	1	A	58	19	12	68
	3		15	19	8	69
4	0	M	20	19	3	58
	9		3	19	4	59
	11		15	19	7	63
	1	A	14	19	11	65
	5		34	18	57	61
	8		40	19	1	56
5	0	M	13	19	6	54
	8		42	19	7	55
	11		2	19	9	59
	1	A	15	19	12	59½
	2		5	19	13	60½
6	8	M	45	18	59	60½
	11		56	19	9	65½
	1	A	15	19	10	67
7	0	M	30	19	5	58
	9		10	19	3	61½
	1	A	5	19	16	66

September.						
D.	H.	M.		°	′	Th.
7	3	A	2	19	10	65
8	1	M	46	19	4	57
	9		15	19	1	60
	11		6	19	6	64
	0	A	32	19	10	66
9	0	M	46	19	4	58
	9		42	19	5	66
	11		35	19	11	72
	0	A	56	19	10	73
	6		51	19	4	69
	9		7	19	4	68
10	0	M	40	18	37	66
	8		32	19	1	68½
	10		58	19	7	75
	0	A	56	19	18	77½
	1		15	19	20	78
	3		40	19	13	77½
	9		2	19	4	67
11	0	M	20	19	4	63½
	8		22	19	4	62
	11		4	19	11	63½
	1	A	20	19	14	64½
	2		50	19	16	64
	5		25	19	7	62½
12	0	M	23	18	54	55½
	8		30	19	8	59
	9		30	19	1	61½
	11		20	19	9	66
	1	A	25	19	13	67
	7		10	19	5	62
13	0	M	54	19	4	61
	9		20	19	2	67
	11		45	19	11	69
	1	A	30	19	12	70

September.						September.					
D.	H.	M.	°	′	Th.	D.	H.	M.	°	′	Th.
13	4 A	32	19	6	67	17	11 A	55	19	5	56
14	0 M	20	19	3	61	18	8 M	16	19	4	55
	8	15	19	1	58		11	25	19	15	61½
	9	25	19	3	60		6 A	0	19	5	57
	11	20	19	9	63		11	42	19	4	50½
	1 A	30	19	11	66	19	8 M	35	19	5	53
	3	40	19	10	63½		9	40	19	16	55
	5	32	19	7	61½		11	30	19	15	59
	11	55	19	2	54		1 A	32	19	19	60½
15	8 M	25	19	0	54½		3	2	19	12	60
	11	12	19	14	60		8	55	19	8	53
	1 A	30	19	13	61	20	0 M	20	19	2	48½
	8	55	18	53	54		8	40	19	1	50½
	11	58	18	53	53		11	20	19	9	58
16	9 M	30	19	9	58		1 A	40	19	11	60
	11	7	19	10	63		3	32	19	11	58½
	1 A	55	19	7	64½	21	0 M	2	19	2	48
	1	58	18	53	64½		8	45	19	1	56
	2	10	19	15	64½		11	10	19	9	60
	7	51	20	14	56		1 A	15	19	13	62
	7	52½	19	30	56		5	28	19	6	58½
	7	54½	19	14	56		9	16	19	1	54½
	7	57½	17	56	56		11	57	19	3	53
	7	59	17	44	56	22	8 M	28	19	0	56½
	8	5	18	34	56		11	4	19	5	63
	8	11	18	43	56		1 A	30	19	13	63½
	8	18	19	22	55½		3	18	19	12	63
	8	29	19	5	55		6	17	19	10	57
	9	25	18	55	53		9	5	19	4	52
17	8 M	15	19	1	56	23	9 M	55	19	5	59
	11	6	19	9	63		0 A	50	19	13	64
	1 A	17	19	13	64		7	22	19	6	67
	3	10	19	9	65	24	8 M	17	18	58	53
	7	0	19	4	61		11	30	19	9	62

A ſtrong Aurora Borealis

September.					
D.	H.	M.	°	′	Th.
24	1 A	35	19	16	65
	3	14	19	13	63
	8	54	18	53	56½
	9	18	18	54	56
	11	52	19	18	53½
25	8 M	25	18	59	53
	10	2	19	3	54½
	11	15	19	8	56½
	1 A	18	19	13	58
	5	16	19	8	58½
	9	24	18	58	57
26	0 M	16	19	1	55
	8	46	19	0	57
	11	30	19	11	57
	1 A	7	19	12	59
	2	15	19	14	60
	3	12	19	15	58
	5	40	19	11	55
	11	45	19	14	49
27	8 M	43	19	1	53
	9	30	19	4	55
	1 A	ρ	19	12	59
	1	52	19	12	59½
	9	16	19	5	53
28	8 M	17	19	18	60
	11	40	19	14	62
	1 A	27	19	15	63½
	2	50	19	10	63
	5	20	19	5	59
	7	0	19	4	58
29	0 M	5	19	5	55
	9	15	19	1	59
	11	44	19	11	62
	1 A	35	19	11	63

An Aur. Bor.

September.					
D.	H.	M.	°	′	Th.
29	9 A	7	19	4	51
30	9 M	46	19	1	55
	0 A	5	19	14	59
	1	40	19	12	61
	11	44	19	4	48

October.					
D.	H.	M.	°	′	Th.
1	8 M	6	18	58	47
	9	7	19	1	48
	2 A	0	19	14	62
	8	52	19	2	52
	11	50	19	3	49½
2	8 M	20	19	14	54
	11	10	19	10	59½
	1 A	12	19	14	60
	8	10	19	4	52
	9	21	18	49	49½
3	0 M	12	18	44	48
	8	41	19	9	48
	10	2	19	8	50½
	11	44	19	14	53
	1 A	35	19	15	54
	4	8	19	9	52½
4	8 M	35	19	0	54
	11	14	19	9	58½
	1 A	25	19	12	59
	9	11	19	3	53½
5	8 M	25	18	58	50½
	9	46	19	0	56
	11	15	19	6	59½
	1 A	12	19	10	62
	2	30	19	8	62

Aur. Bor.

October.

D.	H.	M	°	′	Th.
5	9 A	18	19	6	58½
	11	16	19	4	58
6	9 M	0	19	1	60
	11	32	19	8	63
	1 A	33	19	12	65
	3	7	19	9	65½
	9	15	19	4	60
7	0 M	22	19	5	56
	10	1	19	1	63
	1 A	23	19	9	67
	9	10	19	4	57
8	8 M	12	18	55	52
	10	58	19	4	63
Aur. Bor.	1 A	30	19	24	70
	3	2	19	17	69½
	4	24	19	23	67½
9	0 M	28	18	26	56
	8	26	19	23	54
	11	15	19	14	67½
	4 A	21	19	7	68
	9	40	18	54	60
10	8 M	30	19	8	60½
	9	51	19	7	64
	11	5	19	11	65
	1 A	12	19	12	66
	3	35	19	7	65
	7	20	18	57	62
11	8 M	7	19	3	58
	11	13	19	7	60
	1 A	32	19	10	61
	3	15	19	9	59½
	5	30	19	5	58½
12	0 M	2	18	57	56
	8	31	18	58	58½

October.

D.	H.	M.	°	′	Th.
12	11 M	22	19	7	59
	1 A	20	19	12	62
	3	2	19	8	60
	5	38	19	5	58
	9	7	19	4	54
	11	46	19	3	51
13	8 M	32	18	59	52
	11	30	19	7	57
	1 A	28	19	14	58
	9	44	19	3	50
14	10 M	7	19	3	56
	11	45	19	9	55
	0 A	57	19	10	54
	5	28	19	4	53½
	9	34	19	4	51
15	9 M	0	18	59	49
	10	52	19	7	53½
	1 A	13	19	10	57
	3	15	19	8	57
	9	18	19	4	56
16	0 M	32	19	5	55
	8	31	18	59	56
	11	20	19	10	59
	1 A	26	19	11	61
	5	24	19	4	58
	9	16	19	5	59
17	9 M	8	19	2	61
	11	16	19	11	61
	1 A	28	19	10	59
	3	27	19	6	57
	6	24	19	5	53
18	10 M	13	19	4	50
	1 A	0	19	10	52
	8	3	19	5	47½

October.					
D.	H.	M.	°	′	Th.
19	8 M	41	19	1	42½
	1 A	8	19	14	50
	3	12	19	13	49
	9	10	19	5	43
20	9 M	32	19	2	39
	11	9	19	9	41½
	0 A	50	19	12	43
	9	24	19	5	39½
21	3 A	7	19	9	53
	10	54	19	5	52
22	10 M	9	19	6	57
	0 A	44	19	11	59
	6	26	19	7	57
23	0 M	14	19	4	51½
	8	31	19	2	47
	11	32	19	9	55
	1 A	4	19	10	56
	5	8	19	8	52
	7	4	19	7	50
	11	41	19	7	45
24	8 M	36	19	2	43
	1 A	8	19	14	53
	3	10	19	12	51
	11	55	19	8	43
25	8 M	46	19	2	49
	11	9	19	9	53
	1 A	28	19	13	55
	2	57	19	11	54½
	7	52	19	8	50
26	8 M	32	19	2	45
	11	20	19	10	48½
	1 A	13	19	11	50
	3	0	19	9	51½
	8	56	19	7	50½

October.					
D.	H.	M.	°	′	Th.
26	11 A	55	19	9	51½
27	8 M	32	19	1	50
	1 A	17	19	14	47
	3	46	19	13	45½
	9	2	19	7	41
28	9 M	46	19	4	49
	11	12	19	10	49½
	1 A	3	19	12	52
	5	10	19	9	49
	9	12	19	7	48
29	8 M	55	19	2	49
	11	0	19	8	52
	1 A	22	19	14	55
	3	35	19	12	54
	8	46	19	2	52
30	8 M	40	19	6	50½
	11	8	19	15	52½
	1 A	6	19	17	53
	4	18	19	10	50
	9	32	19	4	44½
31	8 M	36	19	9	42
	9	22	19	7	44
	1 A	22	19	18	50
	3	40	19	16	49
	5	45	19	13	46
	9	32	18	54	42

A faint Aur. Bor.

November.					
D.	H.	M.	°	′	Th.
1	0 M	21	18	39	39
	9	58	19	14	43
	1 A	38	19	11	46½
	11	52	19	7	38

November.						November.					
D.	H.	M.	°	′	Th.	D.	H.	M.	°	′	Th.
2	8 M	54	19	4	44	9	9 M	48	19	14	45
	1 A	26	19	10	50		1 A	37	19	18	50
	3	50	19	8	47½		9	35	19	3	52
	9	28	19	7	39½	10	8 M	35	19	7	46
3	8 M	40	19	4	37½		1 A	6	19	15	48½
	10	1	19	6	43		8	46	19	3	41
	11	24	19	10	47	11	10 M	7	19	7	42
	1 A	36	19	11	51		11	21	19	11	43½
	9	12	19	5	44		1 A	4	19	14	45
4	0 M	46	19	6	40		2	25	19	14	45
	10	2	19	6	48		7	28	19	10	40
	11	10	19	10	51	12	8 M	44	19	8	37½
	1 A	17	19	13	56		11	16	19	14	42
	5	17	19	9	55		1 A	6	19	15	44
5	0 M	25	19	6	55		3	20	19	12	42½
	9	36	19	3	57½		6	49	19	9	40
	1 A	28	19	17	58	13	8 M	36	19	8	40½
	6	54	19	4	54		11	29	19	15	43½
6	8 M	37	19	4	47½		1 A	7	19	16	46
	11	4	19	10	49		3	57	19	13	43
	1 A	7	19	15	51		9	58	19	9	38
	3	1	19	16	49	14	9 M	2	19	10	36
	5	16	19	12	45		1 A	48	19	15	43½
	9	17	19	10	44		3	4	19	14	42
7	8 M	14	19	9	46		7	46	19	9	37
	11	5	19	11	49	15	8 M	37	19	8	36
	1 A	26	19	14	52		10	55	19	12	41
	3	20	19	14	52		1 A	33	19	14	43
	7	17	19	10	47		4	36	19	10	40
8	0 M	46	19	11	42		11	30	19	9	33½
	8	52	19	11	42	16	8 M	47	19	5	31
	11	6	19	15	46½		11	47	19	14	38
	1 A	22	19	18	47		1 A	34	19	16	41½
9	0 M	31	19	12	44		3	36	19	14	40

November.						November.					
D.	H.	M.	°	′	Th.	D.	H.	M.	°	′	Th.
16	5 A	45	19	9	37½	23	8 A	52	19	6	31
17	9 M	16	19	7	32	24	0 M	14	19	3	31
	11	9	19	13	37		9	4	19	14	33½
	1 A	42	19	14	40		11	0	19	18	37
	3	26	19	13	38½		1 A	16	19	20	38
	9	5	19	7	33		4	22	19	9	39
19	9 M	7	19	7	32		7	23	19	6	39½
	11	46	19	15	38		9	57	19	5	39½
	1 A	15	19	15	38	25	10 M	2	19	7	42
	2	57	19	14	38		11	40	19	10	46
	6	3	19	10	35½		1 A	5	19	12	48
	9	38	19	7	34		4	22	19	9	49
20	0 M	13	19	9	35	26	8 M	58	19	8	53
	9	4	19	6	35½		10	56	19	13	54
	10	14	19	8	37		1 A	23	19	16	54
	11	35	19	10	38		3	2	19	14	53½
	2 A	53	19	14	36		7	46	18	57	49
	5	2	19	12	35		9	25	18	44	48
21	0 M	7	19	9	34½	27	8 M	42	19	2	42½
	9	5	19	5	37		11	12	19	26	46½
	11	15	19	10	37		1 A	0	19	19	48
	1 A	12	19	14	37		3	2	19	14	48
	3	11	19	14	36½		5	33	19	14	47
	8	20	19	8	35½		9	45	18	44	49
22	0 M	10	19	6	34	28	8 M	32	19	5	53
	9	4	19	8	29		0 A	7	19	13	53
	11	28	19	12	34		1	26	19	14	53
	1 A	7	19	13	37		2	52	19	11	51½
	3	12	19	13	36		6	0	19	7	47
	9	36	19	9	30		9	10	19	4	43
23	9 M	5	19	11	24	29	9 M	14	19	7	38½
	11	12	19	16	26		10	46	19	9	41
	1 A	30	19	18	33		1 A	20	19	10	44
	3	37	19	15	33		5	16	19	6	39

Faint Aur. Bor.

November.

D.	H.	M.	°	′	Th.
30	0 M	25	19	4	33
	11	16	19	10	36
	8 A	53	19	4	32½

December.

D.	H.	M.	°	′	Th.
1	9 M	16	19	8	31½
	11	17	19	13	34½
	1 A	30	19	13	37½
	2	50	19	10	38½
	8	52	18	59	41½
	9	30	18	44	41½
2	1 A	12	19	14	43
	7	44	19	5	47
3	11 M	9	19	12	39½
	1 A	58	19	15	43
	3	51	19	8	41
	9	30	19	4	39
4	9 M	5	19	6	36
	11	1	19	9	36
	1 A	9	19	10	36½
	3	2	19	8	36
5	8 M	53	19	6	34
	10	3	19	9	36
	2 A	26	19	10	41
	10	1	19	2	35
6	0 M	15	19	3	37
	9	5	19	4	39
	11	7	19	9	40
	0 A	45	19	9	39
	8	2	19	2	33½
7	8 M	58	19	3	34½
	10	22	19	5	35

December.

D.	H.	M.	°	′	Th.
7	1 A	35	19	8	37
	4	54	19	6	37
	9	32	19	4	36
8	0 M	25	19	5	35
	9	17	19	4	37½
	11	5	19	7	40
	1 A	4	19	11	42
	3	0	19	11	41
	5	37	19	9	37
	9	45	19	4	40
9	0 M	16	19	5	39
	10	37	19	8	38
	1 A	21	19	10	41
	3	40	19	9	40
	11	48	19	7	39
10	8 M	20	19	7	36
	10	24	19	9	38
	1 A	25	19	10	41
	3	48	19	9	40
	9	16	19	3	38½
11	0 M	15	19	4	37½
	9	2	19	5	35
	11	10	19	9	36½
	0 A	47	19	10	37½
	3	28	19	12	37
	9	40	19	6	34
12	9 M	14	19	7	30½
	11	3	19	9	34
	1 A	12	19	13	34½
	3	30	19	8	33
	9	5	19	6	30
13	9 M	2	19	7	28½
	10	10	19	12	30
	2 A	1	19	14	31

December.							December.						
D.	H.	M.		°	′	Th.	D.	H.	M.		°	′	Th.
13	8	A 58		19	4	30½	20	10	M 32		19	9	37
14	9	M 5		19	7	31		1	A 58		19	12	40
	11	7		19	9	33		4	10		19	11	41
	0	A 55		19	14	33	21	9	M 5		19	8	37
	3	20		19	12	32		11	26		19	9	39
	6	17		19	1	31		1	A 0		19	11	39
	9	8		19	5	30		4	0		19	11	40
15	9	M 25		19	7	31		6	16		19	10	40
	11	24		19	13	35		9	15		19	9	39
	1	A 30		19	17	36	22	10	M 5		19	10	38
	3	20		19	8	33½		11	56		19	12	39½
16	0	M 15		19	7	29		1	A 49		19	16	40
	10	22		19	8	33		5	6		19	10	39
	1	A 16		19	13	36		8	50		19	9	38
	5	37		19	13	31½	23	0	M 48		19	8	37
	9	15		19	7	33½		10	30		19	16	38
17	9	M 0		19	6	26½	An Aurora Bor.	5	A 2		19	9	39½
	11	12		19	10	32½		5	10		19	4	39½
	1	A 40		19	11	34½		5	17		19	14	39
	3	8		19	12	33½		5	22		19	14	39
	9	25		19	8	26½		6	30		19	1	39½
	11	56		19	7	25		7	53		19	2	37
18	9	M 7		19	7	25	24	0	M 40		19	6	37
	11	10		19	11	31		10	25		19	10	36
	1	A 12		19	14	33		1	A 40		19	11	36
	5	23		19	12	32½		3	25		19	9	36
	9	10		19	8	32		6	41		19	6	36
19	9	M 5		19	7	32½		9	18		19	5	36
	11	30		19	13	33½	25	9	M 34		19	6	40
	1	A 25		19	16	34		11	30		19	9	42
	5	37		19	9	34		2	A 0		19	10	43½
	9	10		19	8	32		3	25		19	11	43
20	0	M 5		19	8	32½		5	56		19	10	43
	9	7		19	8	36		8	30		19	6	43

December.						December.					
D.	H.	M.	°	′	Th.	D.	H.	M.	°	′	Th.
26	9 M	40	19	6	42½	29	3 A	15	19	14	45
	11	0	19	7	46		5	42	19	14	44½
	1 A	30	19	13	47		9	5	19	5	46
	3	0	19	12	46¼	30	0 M	12	19	8	46
	7	22	19	10	42½		10	25	19	10	47
	9	4	19	8	42½		11	35	19	11	47
27	0 M	2	19	7	43		1 A	3	19	12	47
	10	24	19	17	38		2	0	19	13	46½
	1 A	28	19	18	42		5	43	19	11	46½
	3	2	19	13	41		9	32	19	9	47
	4	47	19	9	39½	31	0 M	33	19	9	46
28	11 M	23	19	14	45½		9	18	19	8	43
	1 A	15	19	18	47		11	2	19	9	45½
	6	30	19	9	46		1 A	14	19	14	47
	9	11	19	8	44		2	57	19	13	46
29	10 M	0	19	17	46		5	30	19	10	44
	0 A	47	19	14	46		9	2	19	8	42½
	1	43	19	17	45½		11	57	19	8	42

The mean diurnal Variation for each Month in the Year 1759.		
	′	″
January - - -	7	8
February - - -	8	58
March - - -	11	17
April - - -	12	26
May - - -	13	0
June - - -	13	21
July - - -	13	14
Auguſt - - -	12	19
September - -	11	43
October - - -	10	36
November - -	8	9
December - -	6	58